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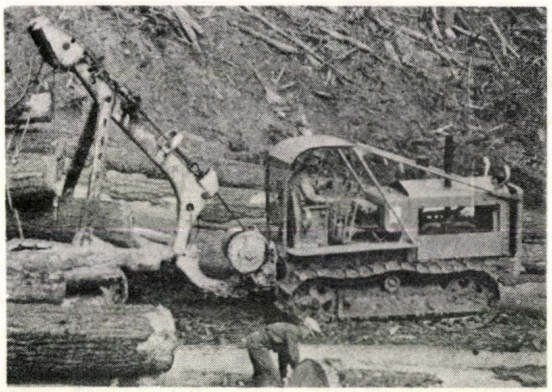
NORTHEASTERN LOGGERS' HANDBOOK

by

Fred C. Simmons

PRELIMINARY REVIEW EDITION



Easier and Safer Work

Greater Production (more pay) and Better Living Conditions

SECTION 9:—LIMBING AND BUCKING THE TREE

NORTHEASTERN FOREST
EXPERIMENT STATION

United States Department of Agriculture

FOREST SERVICE
NORTHEASTERN FOREST EXPERIMENT STATION

614 Bankers Securities Building
Philadelphia 7, Pennsylvania

V. L. HARPER, DIRECTOR

FOREST UTILIZATION SERVICE
James C. Rettie, Chief

If you want to be a mechanic, you will easily find plenty of good books which will tell you what you need to know. You will also find plenty of instructors and training shops.

What about the young man who wants to make his living by logging? For him there is no good source of information to which he can turn. The books and courses on logging are for the logging engineers--not for the fellow who uses the axe and crosscut.

Why shouldn't there be a simple illustrated handbook which will tell the young woodsman (or the green woodsman) what he needs to know about the care and use of his tools and the best of the old and the new techniques of, and devices for logging? He needs to know the "tricks of the trade" as much as anyone.

We hope that these pages, together with other short papers like it, will finally be put together in a printed NORTHEASTERN LOGGERS' HANDBOOK. We are putting it out in this form first because there seems to be an urgent need for this sort of information; and because we need the help and advice of persons who know about logging in our region before printing. We want the experienced logger to tell us what important things we have missed and where our advice is not good. We want the young man going into the woods for the first time to tell us what parts of it he finds hard to understand, to suggest how it can be made more useful to him. We would like the equipment manufacturers to check our recommendations for use of their products and tell us about new devices they are developing.

Please send criticisms, questions and suggestions to: The Director, Northeastern Forest Experiment Station, 614 Bankers Securities Building, Philadelphia 7, Penna. Additional copies of this and other publications in this series can be obtained from the same address.

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LIMBING AND BUCKING THE TREE

Limbing

After the tree is on the ground, the next step is the removal of its limbs. This operation is known as "limbing." Almost all of it is done with the axe.

Good Position

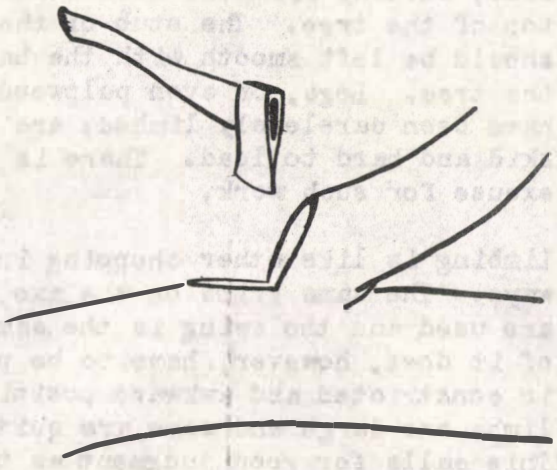
The limb should be cut from its lower side, cutting from the base toward the top of the tree. The stub of the limb should be left smooth with the bark of the tree. Logs, or even pulpwood, which have been carelessly limbed, are hard to skid and hard to load. There is no excuse for such work.

Limbing is like other chopping in most ways. The same grips on the axe handle are used and the swing is the same. Much of it does, however, have to be performed in constricted and awkward positions. Some limbs are large and some are quite small. This calls for good judgment as to the right amount of force to be put behind each swing of the axe. The danger of accidents from an axe which has been deflected by branches is much greater than it is with clear chopping. One good precaution is to clear away interfering branches before attempting to chop a large limb. Wherever possible the axeman should cut limbs on the opposite side of the log and swing the axe away from himself.

Dangerous Position

The inexperienced chopper should do very little limbing while he stands on the tree trunk. As he gains experience and surer control of his axe, he will be able to work safely in the more hazardous positions.

For large limbs, particularly on hardwoods, it is frequently necessary to cut a notch similar to that used in cutting down a tree. Cut from the lower side of the limb, as always, and keep the bottom of the notch smooth with the trunk. The vertical side of the notch should slope somewhat with the angle of the limb. In this case a larger notch will be easier to cut than a smaller one. The downward cut is then made with the grain of the wood and not directly across it.



A word should be said about hemlock knots. On dead limbs especially, these are very hard. It is sometimes better to break off small limbs with the heel of the axe than to try to chop them. It is easy to take a huge nick out of the axe by swinging too hard at right angles to a hemlock limb. The worst problem is in cold weather when the axe itself is more brittle. When it is cold, warm the axehead between your hands before using it on such limbs, and see that the edge is ground thicker than would be used for ordinary chopping. As a final precaution, chop lightly at an angle to, or with the grain, and do not attempt to twist out the chips.

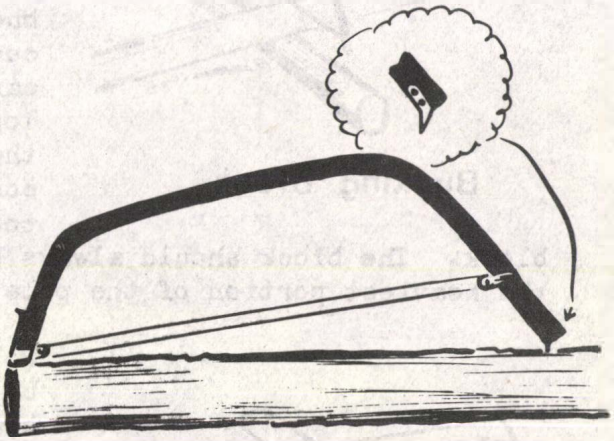
Big limbs on hardwoods are often easier to saw off than to chop off.

Bucking

As woods operations have become more mechanized, the bucking operation --cutting the tree into log lengths--has been shifting from the stump location to the "landing" by the roadside, or even to the plant where the wood is utilized. It is anticipated that this trend will continue. There is economy in handling long logs or tree-length timber when the quantity to be handled justifies the purchase of heavy equipment for skidding, loading and hauling. There is also economy in doing the bucking at the landing or in the mill yard. Semi-portable power saws become feasible. Logs are cut to more accurate lengths. A bucking crew which does nothing else will be able to develop skill in cutting the maximum quality logs, especially out of hardwood trees. In the smaller operations, however, and in a great many other cases the bucking

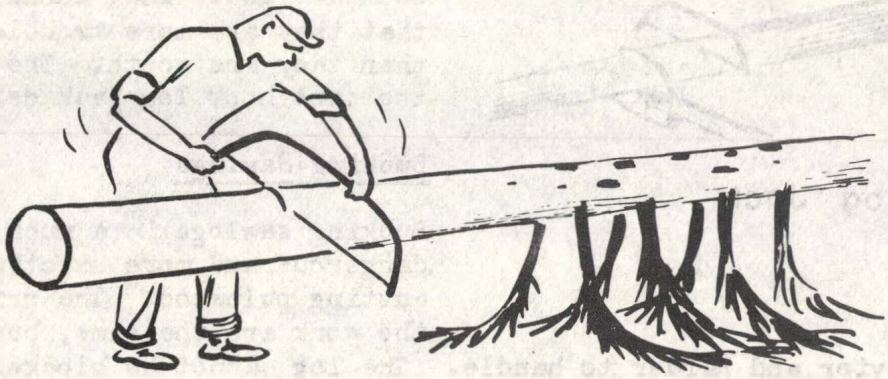
will continue to be done in the woods. Even at the landing and in the yard, some of the bucking will be done by hand. The subject of hand bucking still deserves attention.

Bucking Pulpwood and Millwood

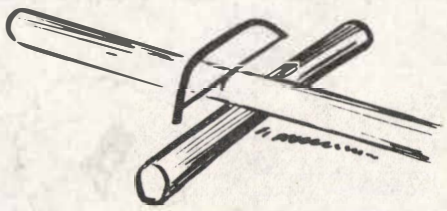


Most pulpwood in the Northeast is still bucked into four foot lengths in the woods. The tool most commonly used is the 42-inch bow saw. The frame, with its protruding handle, provides an accurate and convenient measure. Some cutters have a small prong riveted on the handle of the saw frame and use this to scratch a mark on the log. The whole tree is often marked off before the bucking job begins.

Some cutters prefer to leave the limbs which support the tree from underneath and remove them after bucking is completed. These limbs provide a support which holds the tree trunk off the ground and keep it from rocking. They usually leave the butt hanging free also so the saw cut does not pinch.

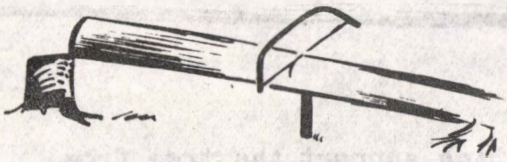


Two things to avoid in bucking are getting the saw blade pinched, and sawing into the ground. Care should also be taken that the bucked off log does not fall or roll on one of the buckers. These things can be largely eliminated by seeing that the log is properly supported.



Bucking Block

If the butt end of the tree does not hang free, or if it is supported too high for convenient work, it may be easier to start bucking higher on the stem. This will cut the tree into two or more logs which can be handled more easily. The shorter logs cut usually have to be blocked up off the ground. A bolt of pulpwood makes a convenient block, and the peavy is a good tool to use in prying the log up onto the block. The block should always be placed on the side of the sawout toward the heaviest portion of the pole, leaving the end to be cut off hanging free.



Prop or "Dutchman"

Poles supported at the ends can frequently be sawed through successfully with the thin bladed bowsaw. Bad cases of pinching can be reduced by driving a wedge into the cut following the blade, or by cutting a piece of wood the right length and inserting a prop or "Dutchman" under the cut. A prypole is also frequently used to relieve a pinch on small logs.

Log Jack

Several different kinds of log jacks for use in bucking pulpwood in the woods have been devised. Most woodsmen, however, think that they are more trouble to lug around than they are worth. The one exception is the cant hook log jack described in Section 5.

Bucking Sawlogs

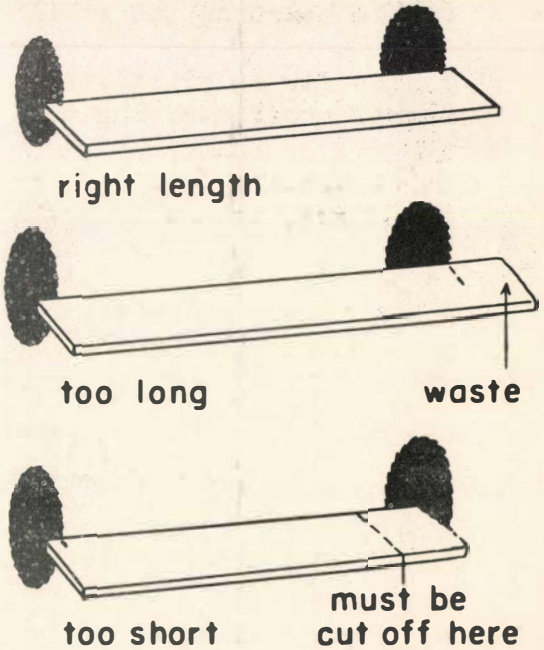
Bucking sawlogs is a much harder, more dangerous and more exacting job than cutting pulpwood. The principles of doing the work are the same, but the sticks are heavier and harder to handle. The log cannot be blocked up very easily. The crosscut saw is more likely to pinch than is the thin-bladed bow saw. The bucker must know, at least in hardwoods, something about log grades so that he will mark the tree trunk in a way that will give the best quality logs.

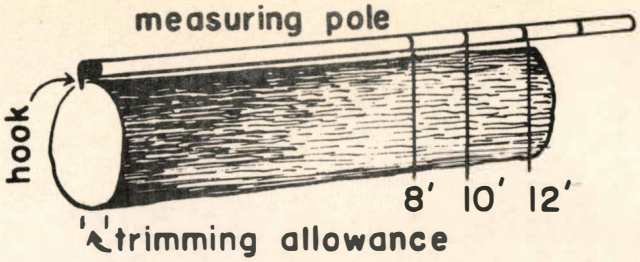
BUCKING PEELED HEMLOCK LOG

In the northeastern states sawlogs are ordinarily cut in lengths from 8 to 16 feet by two-foot intervals. There is some demand for 20, 24, and even 32-foot logs. Increasingly, as supplies become scarcer, premium prices are paid for the highest quality logs, and the longer logs in the 8 to 16-foot group. Where special markets exist, an additional premium is paid for logs over 16 feet in length. Therefore, the importance of good judgment in dividing the tree into logs and knowledge of current market conditions would be difficult to exaggerate.

Accuracy of measurement is important also, especially in bucking softwoods. Ordinarily a three-inch trimming allowance for each 16-feet or shorter length is specified in order that any irregularity in the ends can be evened off by the trim saws at the mill, leaving square end boards of the full specified length. Logs failing to have this allowance are frequently scaled the next lower allowable length and logs with a greater allowance are penalty scaled for unnecessary wastage, either resulting in depriving the piece-work bucker of some of his earnings.

Consequently, it is wise to have an accurate measuring pole, with the specified trimming allowance at the butt, and to guard against shortening it by chopping off the end as the mark is made on the log. A metal hook on the butt end of the pole is often an aid to its more accurate use.





The first step in bucking hardwood sawlogs should be to measure the total merchantable length of the tree. Then this total length should be subdivided into the individual log lengths in a way that will obtain both maximum scale and grade. This job should be done before the crew starts to buck.

A few pointers to aid in obtaining maximum scale and grade are given below:

1. Sawcuts made below large limbs generally give larger scale in the butt log.

2. Surface defects should be kept in the butt portions of logs wherever possible, where they will be trimmed off in the slabs at the sawmill, and where little or no scale deduction need be made for them.

3. Defects should be grouped in one log if possible. If this cannot be done, keep them as near the ends of the logs as possible. This often means sawing through knots, rotten areas, etc., which is contrary to the natural inclinations of the sawyers, but it pays handsomely in raising the grade of the product.

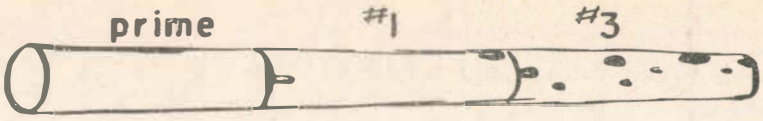
4. Avoid sawing too close to the base of a crotch, and showing a double heart on the small end of the log.

5. So far as practicable, cuts should be made at points of the most abrupt crook, leaving the cut logs as straight as possible.

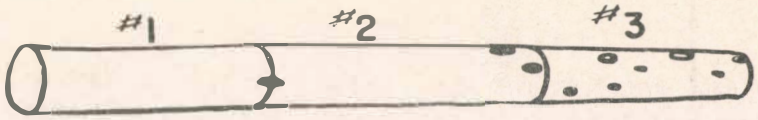
6. Splitting logs in bucking should be avoided by choice of pieces to cut first, or use of props or "Dutchmen."

Cut like this

Not this



Cut like this



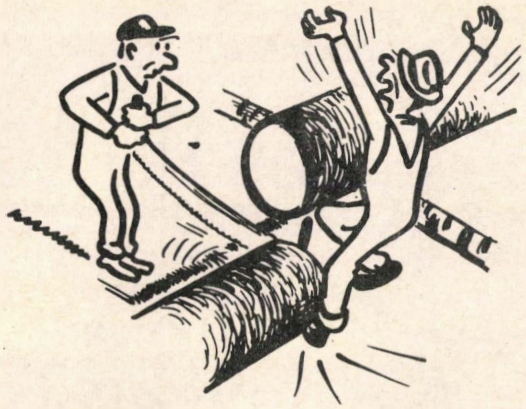
Not this

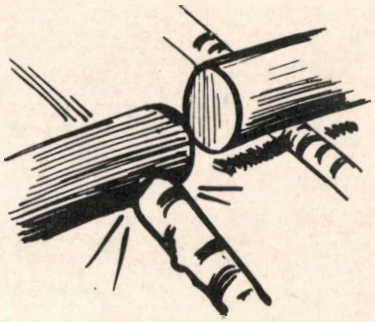
The actual sawlog bucking operation is done in much the same manner as the pulpwood bucking already described. Because of the greater diameters the crosscut saw is ordinarily used, instead of the bowsaw. With the wider blade pinching is more often a problem than it is with the narrow bow saw blade. And the heavier logs cannot be moved around so readily to get them in good position for bucking.

Consequently, wedges are used very frequently in sawlog bucking, and the crew will ordinarily carry two or three of them, and a maul to drive them.

Before starting to buck it is frequently necessary to clear out the brush and trash on either side of the log, to give the sawyers space to work. Special attention should be given to brush that may be caught in the saw teeth as the saw progresses downward, to jam the cutting.

Because of the weights of the logs it is often desirable to place blocks under or along side the trunk, to keep the cut-off section from dropping or rolling on one of the cutters. This is particularly true when bucking on a hillside.





Blocking is also used to prevent the log from splitting and destroying valuable material. In some cases, when a heavy trunk is suspended from the two ends it is necessary to make at least part of the cut from underneath. This is hard work, because the saw has to be held up into the cut as well as pulled through it. So it is avoided whenever possible. In the West, special roller devices have been developed to hold the saw up into such cuts, but they would be used so seldom in the East that they would probably not be worth lugging around.

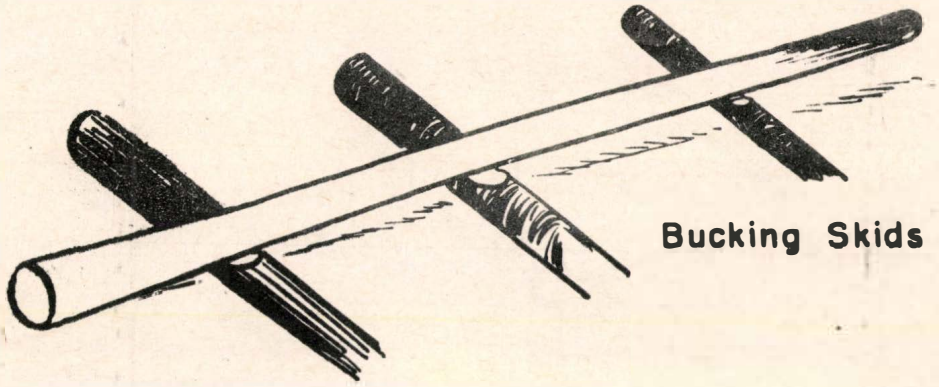
Size of Crew

Most of the sawlog bucking in the Northeast is done by the two-man felling crews. Quite frequently, however, a three-man crew would be more efficient. The third man can work ahead of the two with the saw, doing the measuring, swamping out places for the sawyers to work, and shoring up the log where that is necessary. He could also handle the wedges and peavy or pry-pole. For chain saw bucking in the woods this three-man crew is practically a necessity.

Bucking at the Landing

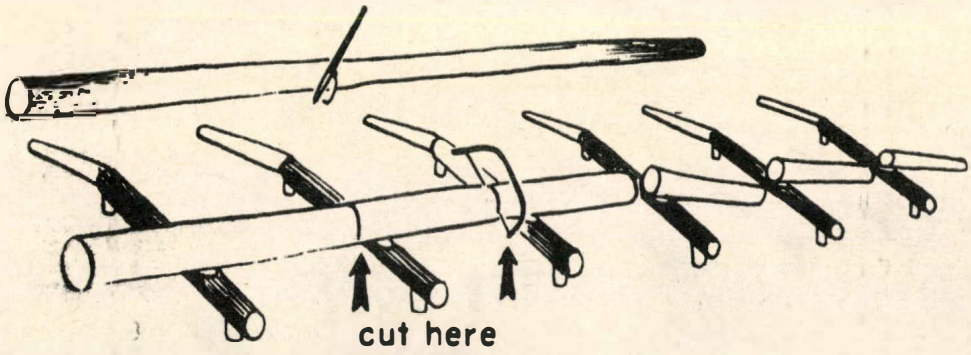
When logs are bucked at the landing, a larger crew can be used to good advantage. Work can be more closely supervised and greater use of mechanical equipment is feasible.

Much bucking at the landing is done on skids with the center one higher than those on the outside, to reduce the possibilities of pinching. Bucking is done on whichever end is unsupported.



Bucking Skids

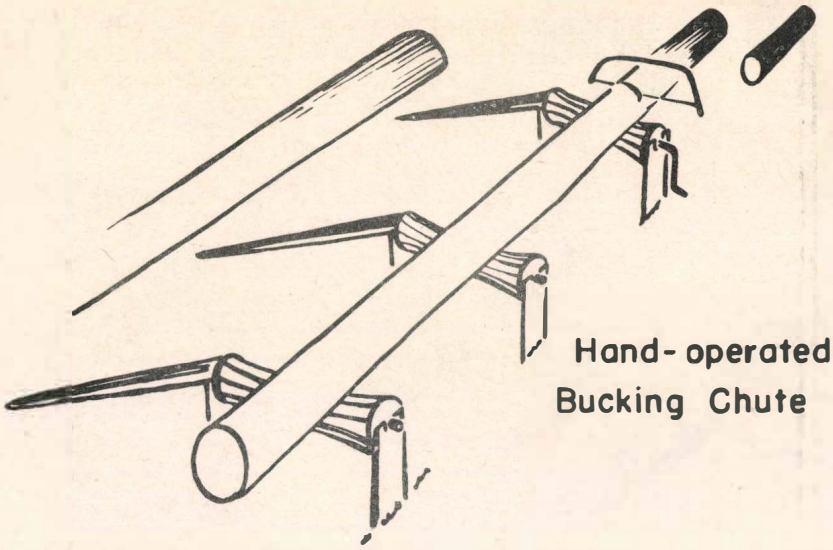
On some pulpwood jobs a "ladder" is used to support the pole while it is being bucked. The rungs provide a rough measurement for each four-foot bolt.



Pulpwood Bucking Ladder

The ladder is being used for both chain-saw and bow-saw bucking. The greatest difficulty is to arrange for the smooth flow of poles onto the device and of pulpwood bolts away from it. The gravity of a suitable slope is of some help in getting the poles rolled on and the wood away.

A mechanical bucking chute, either hand or motor operated offers some advantages. A series of concave fluted rollers with the front one actuated by hand crank could be used. The advantage here is that the bolts of pulpwood drop off in one pile. The stick beyond the saw is always unsupported and therefore will not pinch the saw.



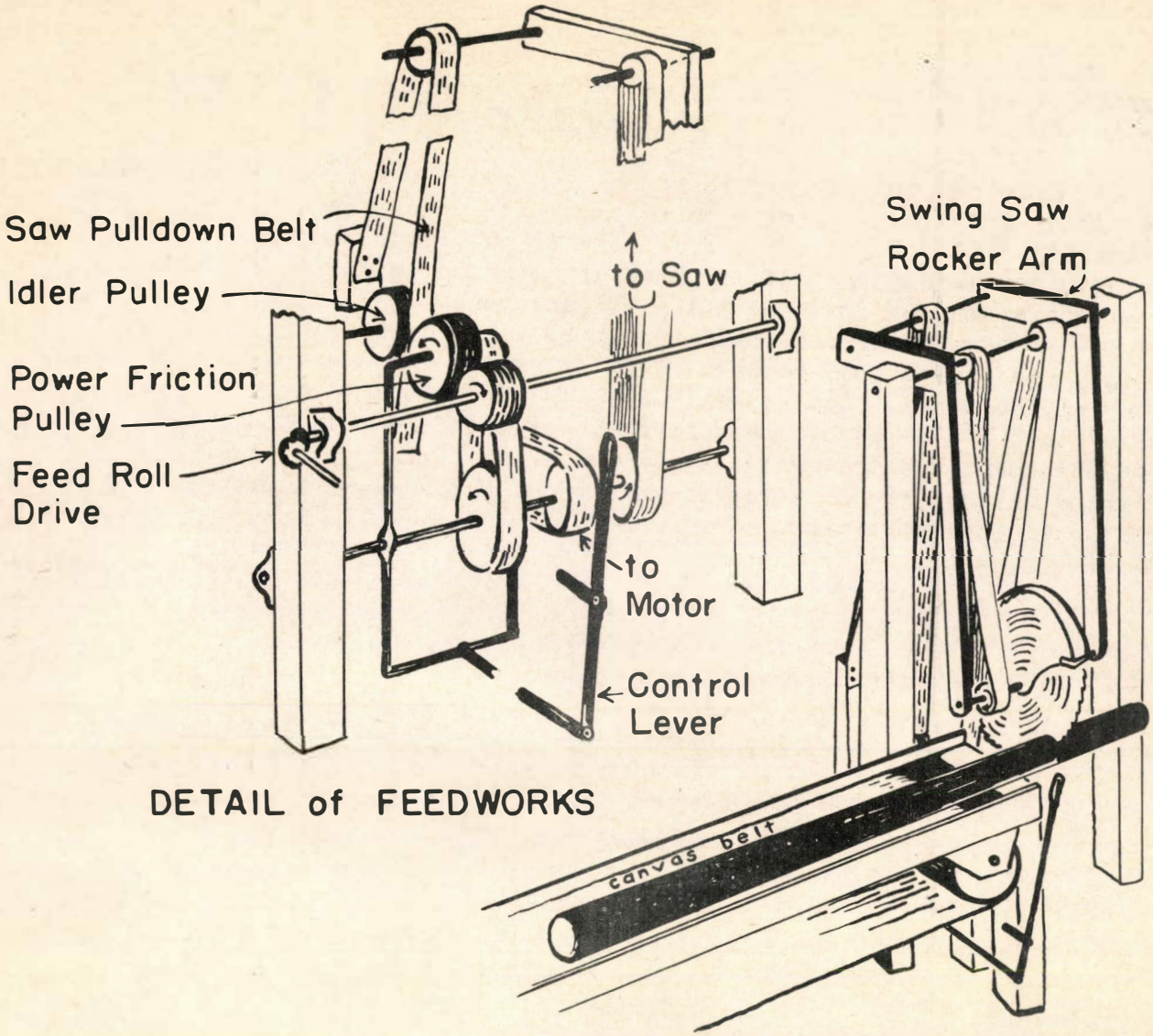
Hand-operated
Bucking Chute

Most operators who have gone so far as to bring poles to the landing will want to go still farther and install a motorized cutting-up plant. All such plants, so far, have been home made. Almost all of them use circular saws. Some saws are pushed or pulled into

the log by a hand lever; others are fed into the wood mechanically. Some have a pole conveyor actuated by live rolls and another conveyor to carry the cut sticks away.

Diagrams of two of the most satisfactory cut up plants installed to date in the Northeast are shown on the following pages.

The Grey Chemical Company rig is notable in that it provides a unique power feed arrangement for the swing saw, instead of depending upon manpower to pull it into the log as most of the other installations do. This consists merely of a rocker arm mounted at the rear of the top of the swing saw frame with a shaft and pulley installed at the back of the arm. Over this pulley is a belt, which is restrained at one end, and passes down between an idler pulley and the power friction pulley at the other. Consequently when the friction pulley is pressed back against the idler by the control lever the free end of the belt is pulled down, and the swing saw is pulled into the pole. After finishing the cut the friction is released and the saw returns to its normal position by gravity.

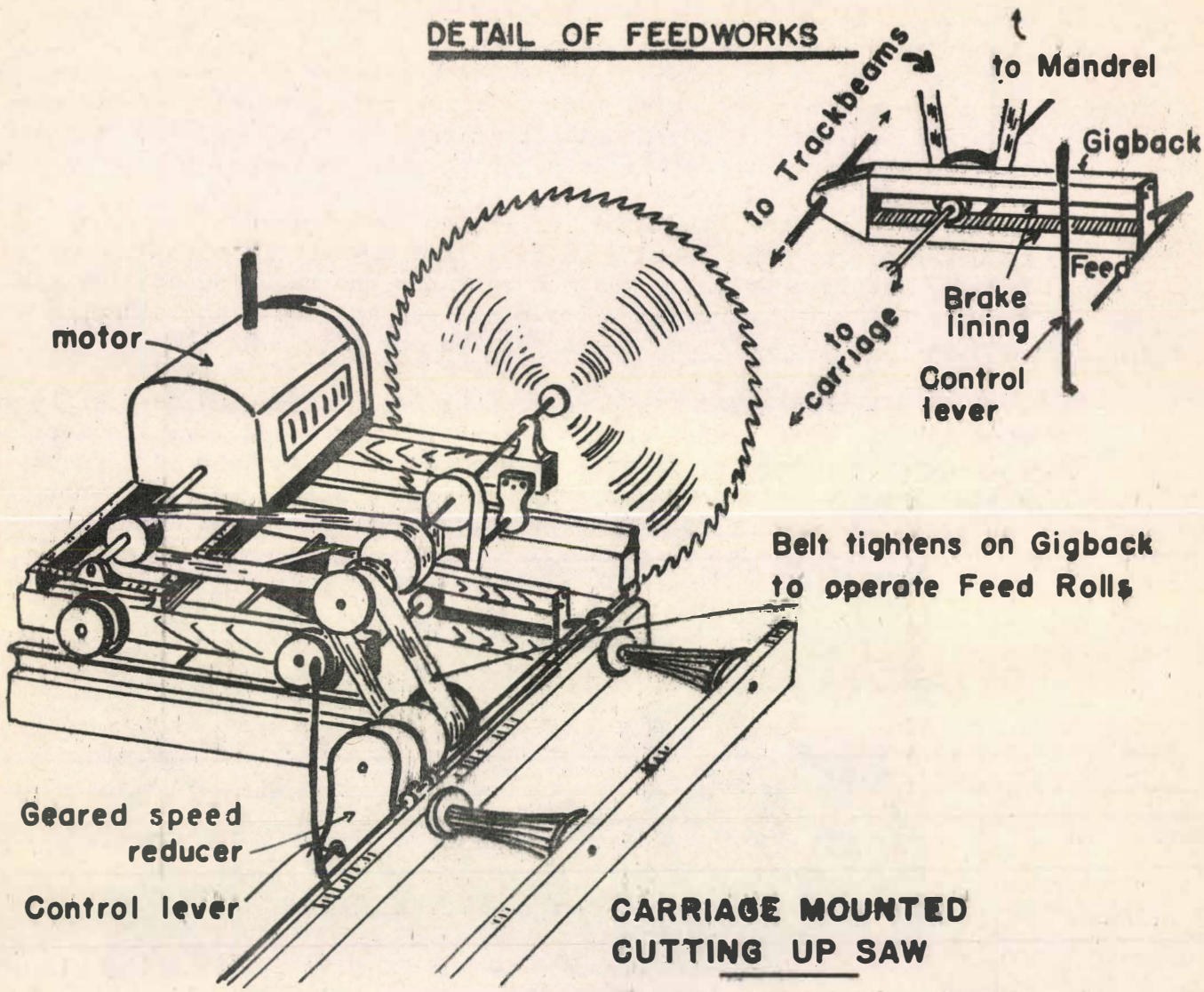


DETAIL of FEEDWORKS

POWERFEED SWING SAW
CUTTING UP PLANT

Grey Chemical Company
Roulette, Pennsylvania

Permission to reproduce these sketches has been given by the Gray Chemical Co. and the Dead River Lumber Co.



The Dead River installation is primarily for big logs. It swings a 60 inch carriage mounted saw. The feed and gigback mechanism as illustrated is simple and effective. When the carriage is gigged all the way back the loose belt from the end of the mandrel to the gear box becomes tight, and the feed rolls come into play. This installation is capable of sawing 60 cords a day of four foot wood.

Integrated Logging

The term "Integrated Logging" is used for jobs where a variety of products are being cut. The tree trunks are cut up into the classes of product for which they would have the greatest value, whether it be veneer logs, sawlogs, turning wood bolts, pulpwood, or fuelwood. Cutting up trees in this way calls for knowledge of the specifications for these various products, and it calls for a knowledge of markets that will enable the operator to sell them profitably. This subject will be disoussed in detail later on in this Handbook.

On the bigger jobs integrated logging is most frequently carried on by bringing the tree lengths in to a landing. It is possible to have a bucking crew there that understands the requirements for the various classes of product to be marketed, and that can recognize what each section of the tree should be cut into.

Even with hand tools the bucking can be done faster and more efficiently than it can back in the woods. But more and more frequently bucking at the landing is done with machinery. A chain saw can be used. The electric chainsaw, with its heavy motor generator unit has proved to be a very efficient tool for this type of work.

One of the power operated circular saw bucking up plants previously described can also be used. Most of these units are now cutting up four foot bolts no matter what the quality of the wood. One company is shunting the better bolts aside to be run through a bolting saw for turning squares, while the majority of the wood goes into the pulpwood piles. It would not be difficult to make provision on one of these machines to run the best sections through and cut 8, 12, and even 16 foot logs from them for the veneer and saw mills. The veneer logs would be worth about three times as much as the same wood would bring for pulp, and the better sawlogs would be worth about twice as much. In this way greater values would be obtained for the product of the logging job.

The small operator, like the farmer logging on his own land, has done much more integrated logging in the past than the bigger jobs. The farm and extension foresters have been teaching him to recognize the products he can cut from his trees that will bring the highest price, and helping him find markets for them.

This type of logging should be encouraged on both the large and small jobs. It should mean more money for the operator, and more money for the man working in the woods.